

42.67 EXHIBIT I - FBI PAMPHLET

IDENTIFICATION



While much of the following article may seem elementary to experienced identification officers and others with a wide knowledge of fingerprints, the some 120,000 fingerprint cards which must be returned by the FBI to contributors each month indicate training in fingerprinting techniques is still needed by many law enforcement officers and other persons responsible for submitting fingerprint impressions to the FBI. Reprints of this article may be obtained in quantity by writing to Director, Federal Bureau of Investigation, U.S. Department of Justice, Washington, D.C. 20535.

The FBI maintains the largest repository of fingerprints in the world. The Identification Division fingerprint files contain in excess of 174 million fingerprint records which include the criminal fingerprint records of over 22 million individuals. This vast reservoir of fingerprint impressions has been recorded on fingerprint cards with the use of printer's ink. In order to properly file the millions of fingerprints received each year, a complete and accurate classification formula must be obtained for each set of prints. This exact formula can only be calculated if a clear and distinct impression of each fingerprint is obtained. Should one or more fingerprints on a card be found too indistinct to interpret accurately, the prints must be returned to the contributor since they

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cannot be accurately classified and filed.

Computer "FINDER" System

In 1967, the FBI launched a concerted program of research and development with the purpose of advancing the state of development of computer technology to a point where automatic fingerprint identification would become a reality. It was necessary to develop automatic scanning equipment that could read and record fingerprint characteristics directly from standard inked fingerprint cards. This information in the form of digital data would, thereafter, be classified and stored in a computer's mass memory system according to classification. Subsequently, it would be matched with data derived from other standard inked fingerprint cards similarly processed by this automatic fingerprint reader equipment.

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A prototype fingerprint reader called FINDER (a contraction of Fingerprint and reader) was delivered to the Identification Division in the fall of 1972 and represents the product of over 5 years of research and development work. FINDER has undergone extensive testing and evaluation, resulting in the development of specification changes to provide for high-volume data processing operations by FINDER production models now being procured.

It is imperative that FINDER make

use of fingerprint impressions in the data base which have been taken with black printer's ink. Tests performed with FINDER disclose that its technology is suited for handling fingerprints obtained by use of black printer's ink, as well as other mediums being introduced for taking fingerprint impressions. Fingerprint impressions taken by some inkless, chemical processes produce black impressions on standard white fingerprint cardstock, which can be processed by FINDER. The performance of FINDER is strongly dependent upon the quality of the fingerprint impressions themselves even though computer logic and image-processing techniques are used to enhance the image of the fingerprint at the time it is processed by this equipment.

FBI Policy Change

The FBI Identification Division has historically adhered to a policy of processing any legible set of fingerprints through its fingerprint files; however, only fingerprints taken with black printer's ink would be retained in the Identification Division files. The FBI has for many years recommended all fingerprint impressions be taken with black printer's ink to insure the fingerprints are clear, legible, and of a permanent nature. The FBI continues to recommend the use of black printer's ink; however, inkless chemical processes for obtaining fingerprints have recently been developed which produce legible black fingerprint impressions on standard white fingerprint cardstock. The FBI Identification Division will now process and retain, in addition to fingerprints taken with black printer's ink, fingerprint impressions taken by inkless chemical processes provided: (1) The fingerprints are recorded with a medium which provides uniform black impressions, clear in contrast, on standard white fingerprint card-

stock. (If other than black printer's ink is used, the endurance of the medium must be attested to as being permanent. This certification should come from the supplier of the process.) (2) The fingerprint submission emanates from an authorized fingerprint contributor and the fingerprint card reflects all necessary data.

For those agencies and departments which continue to use the tried and proven process of recording fin-

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gerprint impressions with black printer's ink, the following is offered for your assistance; however, much of the material offered is applicable to any method of recording fingerprint impressions.

Recommended Equipment

The basic equipment required for taking fingerprints consists of an inking plate, a cardholder, printer's ink (heavy black paste), and a roller. This equipment is simple and inexpensive.

In order to obtain clear, distinct fingerprints, it is necessary to spread the printer's ink in a thin, even coating on a small inking plate. A roller similar to that used by printers in making galley proofs is best adapted for use as a spreader. Its size is a matter determined by individual needs and preferences; however, a roller approximately 6 inches long and 2 inches in diameter has been found to be very satisfactory. These rollers may

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be obtained from a fingerprint supply company or a printing supply house.

An inking plate may be made from a hard, rigid, scratch-resistant metal plate 6 inches wide by 14 inches long or by inlaying a block of wood with a piece of glass $\frac{1}{4}$ of an inch thick, 6 inches wide, and 14 inches long. The glass plate by itself would be suitable, but it should be fixed to a base in order to prevent breakage. The inking surface should be elevated to a sufficient height to allow the subject's forearm to assume a horizontal position when the fingers are being inked. For example, the inking plate may be placed on the edge of a counter or a table of counter height. In such a position, the operator has greater assurance of avoiding accidental strain or pressure on the fingers and should be able to procure more uniform impressions. The inking plate should also be placed so that the subject's fingers which are not being printed can be made to "swing" off the table to prevent their interfering with the inking process. A fingerprint stand such as that shown in figure 1 may be purchased from fingerprint supply companies. The stand measures approximately 2 feet in length, 1 foot in height and width. This stand contains a cardholder and a chrome strip which is used as the inking plate. Two compartments used to store blank fingerprint cards and supplies complete the stand. This equipment should be supplemented by a cleansing fluid and necessary cloths so that the subject's fingers may be cleaned before rolling and the inking plate cleaned after using. Denatured alcohol and commercially available cleaning fluids are suitable for this purpose.

The fingerprints should be taken on 8- by 8-inch cardstock, as this size has generally been adopted by law enforcement because of facility in filing and desirability of uniformity. The FBI supplies, free of cost, arrest

fingerprint cards (FD-249), applicant fingerprint cards (FD-258), and personal identification fingerprint cards. The standardized size, color, format, and data input of the arrest and applicant fingerprint cards are essential to the timely processing of the large daily volume of fingerprints received by the FBI.

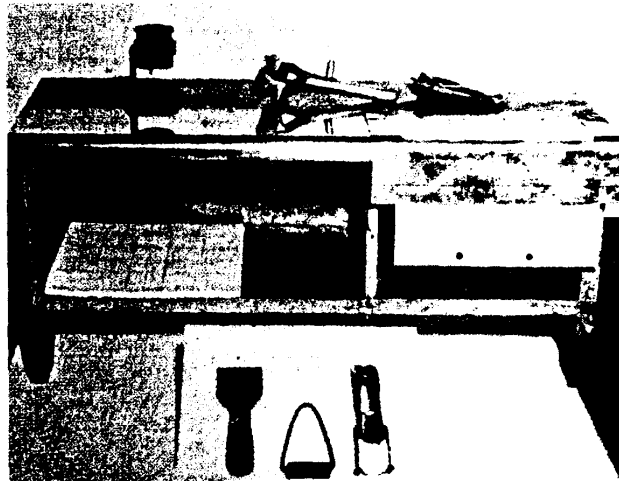
Taking Fingerprints Properly

Figure 2 shows fingerprints properly taken on one of the standard personal identification cards from the Federal Bureau of Investigation. From this illustration, it is evident that there are two types of impressions involved in the process of taking fingerprints. The upper 10 prints are taken individually—thumb, index, middle, ring, and little fingers of each hand in the order named. These are called "rolled" impressions, the fingers being rolled from side to side in order to obtain all available ridge detail. The smaller impressions at the bottom of the card are taken by simultaneously printing all of the fingers of each hand and then the thumb without rolling. These are

called "plain" or "simultaneous" impressions and are used as a check upon the sequence and accuracy of the rolled impressions. Rolled impressions must be taken carefully in order to insure that an accurate fingerprint classification can be obtained by examination of the various patterns. It is also necessary that each focal point (cores and all deltas) be clearly printed in order that accurate ridge counts and tracings may be obtained.

In preparing to take a set of fingerprints, a small daub of ink should be placed on the inking glass or slab and thoroughly rolled until a very thin, even film covers the entire surface. The subject should stand in front of and at a forearm's length from the inking plate. In taking the rolled impressions, the side of the bulb of the finger is placed upon the inking plate, and the finger is rolled to the other side until it faces the opposite direction. Care should be exercised so the bulb of each finger is inked evenly from the tip to below the first joint. By pressing the finger lightly on the card and rolling in exactly the same manner, a clear rolled impression of

Figure 1. Fingerprint stand.



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Figure 2. Fingerprints properly taken.

the finger surface may be obtained. It is better to ink and print each finger separately, beginning with the right thumb and then, in order, the index, middle, ring, and little fingers. (Stamp pad ink, printing ink, ordinary writing ink, or other colored inks are not suitable for use in fingerprint work as they are too light or thin and do not dry quickly.)

If consideration is given the anatomical or bony structure of the forearm when taking rolled impressions, more uniform impressions will be obtained. The two principal bones of the forearm are known as the radius and ulna, the former being on the thumb side and the latter on the little finger side of the arm. As suggested by its

name, the radius bone revolves freely about the ulna as a spoke of a wheel about the hub. In order to take advantage of the natural movement in making finger impressions, the hand should be rotated from the more difficult to the easy position. This requires that the thumbs be rolled toward and the fingers away from the center of the subject's body. This process relieves strain and leaves the fingers relaxed upon the completion of rolling so that they may be lifted easily from the card without danger of slipping which smudges and blurs the prints. Figures 3 and 4 show the proper method of holding a finger for inking and printing a rolled impression.

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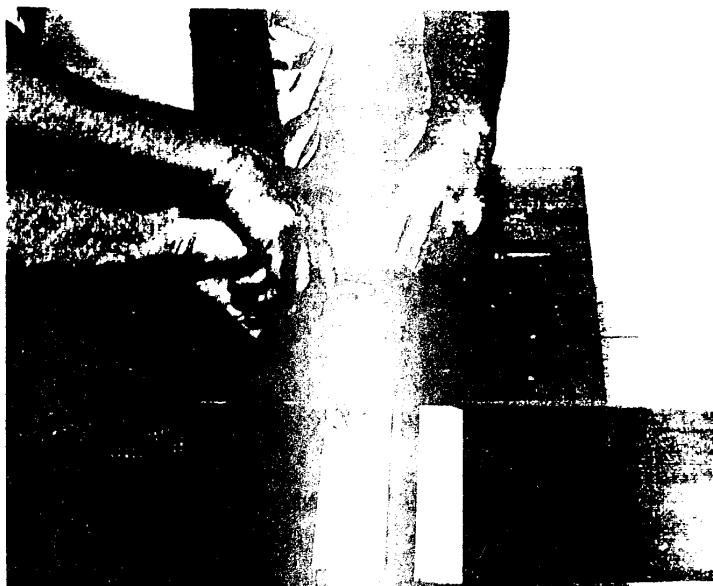
The degree of pressure to be exerted in inking and taking rolled impressions is important, and this may best be determined through experience and observation. It is quite important, however, that the subject be cautioned to relax and refrain from trying to help the operator by exerting pressure as this prevents the technician from gauging the amount of pressure needed. A method which is helpful in effecting the relaxation of a subject's

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Figure 3. Proper method of holding finger.



hand is that of instructing him to look at some distant object and not to look at his hands. The person taking the fingerprints should stand to the left of the subject when printing the left hand. In any case, the positions of both the subject and the technician should be natural and the technician should be natural



Figure 4. Proper method of printing rolled impressions.

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Figure 5. Proper method of taking plain impressions of fingers.



and relaxed if the best fingerprints are to be obtained.

To obtain "plain" impressions, all

of the fingers of the right hand should be pressed lightly upon the inking plate, then pressed simultaneously

upon the lower right hand corner of the card in the space provided. The left hand should be similarly printed,

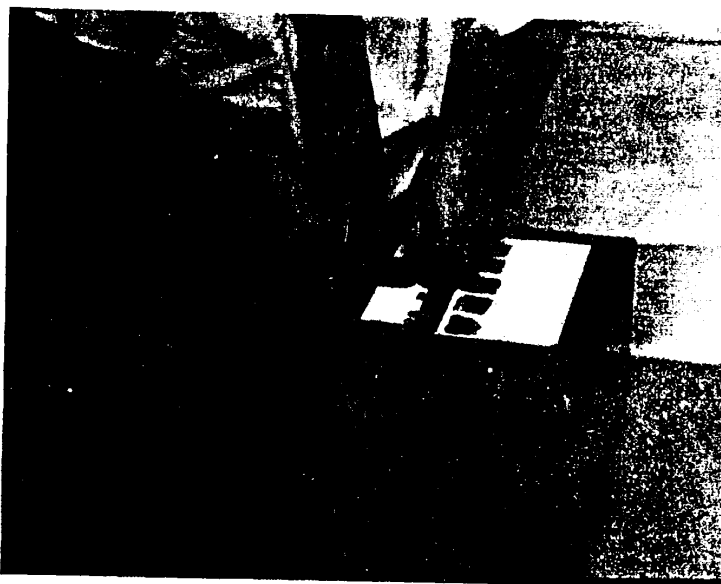


Figure 6. Proper method of taking plain impressions of thumbs.

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"In taking inked fingerprints, the technician frequently encounters situations due to permanent or temporary physiological characteristics which call for different fingerprinting techniques."

and the thumbs of both hands should be inked and printed, without rolling, in the space provided. Figures 5 and 6 show the correct method of taking plain impressions of the fingers and thumbs.

Causes of Unsatisfactory Prints

Indistinct or illegible prints are usually caused by one or more of the following factors:

1. Failure to reproduce the focal points (deltas or cores) because the finger has not been fully rolled from one side to the other, and the bulb of the finger from joint to tip has not been completely inked (fig. 7).

2. Allowing the fingers to slip or twist will result in smears, blurs, and false-appearing patterns (fig. 8). The fingers should be held securely, but with the technician not applying too much pressure. The subject should be instructed not to try to help and to remain passive throughout the fingerprinting procedure.

3. The use of writing or similar ink resulting in impressions that are too light and faint or in which the ink has run, obliterating the ridge detail (fig. 9). The best results will be obtained by using heavy black printer's ink, which should not be thinned before using. This ink will dry quickly and will not blur or smear with handling.

4. Failure to thoroughly clean the fingers or inking apparatus of foreign substances and perspiration, causing the appearance of false markings and the disappearance of ridge characteristics (fig. 10). Alcohol or a nonflammable cleaning agent may be used. In warm weather, each finger should be wiped dry of perspiration before inking and printing the fingers.

5. The use of too much ink, obliterating or obscuring the ridges (fig. 11). If printer's ink is used, a small amount of ink applied to the inking plate will suffice for several sets of prints. It should be spread to a thin, even film by rolling the ink over the plate by means of the roller.

6. Insufficient ink will result in ridges too light and faint to be counted or traced (fig. 12).

Unusual Fingerprinting Situations

In taking inked fingerprints, the technician frequently encounters situations due to permanent or temporary physiological characteristics which call for different fingerprinting techniques. These situations include crippled fingers (bent, broken), deformities (webbed or extra fingers), lack of fingers at birth, amputations, and advanced age of the subject.

In the instances where the subject to be fingerprinted has crippled or deformed fingers, it is not sufficient to merely indicate on the fingerprint card the condition of the fingers such as "bent," "broken," or "crippled." Only in those cases where the fingers are so badly bent or crippled that they are touching the palms and cannot be moved is such a notation appropriate. Fortunately, such cases are extremely rare, and through the use of special inking devices similar to those used for fingerprinting the deceased, it is possible to obtain clear, legible fingerprints from bent or crippled fingers. The equipment for this fingerprint technique consists of a spatula, small rubber roller, and a curved holder for individual finger block

Figure 7.

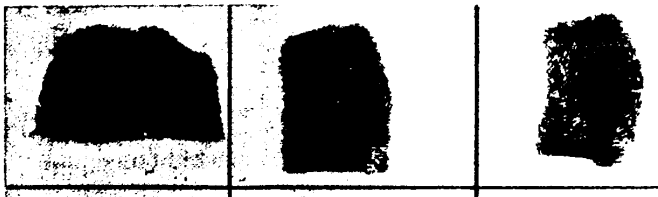


Figure 8.



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Figure 9.



Figure 10.



Figure 11.



Figure 12.

cardstock. This equipment is shown in the foreground in figure 1. Each crippled or bent finger is handled in-

dividually, and after the finger has been inked and printed, the individual finger blocks should be pasted on a

fingerprint card in their proper sequence. Figure 13 illustrates the use of a curved holder for taking the "rolled" impression of a bent and crippled finger. Worn and indistinct friction ridges or those bearing numerous creases can be readily reproduced in this same manner.

Webbed and split fingers should be printed in the same manner. An appropriate notation should be made on the fingerprint card concerning any of these deformities. An extra digit, usually an extra thumb or extra little finger, sometimes appears on the extreme outside of either hand. In some instances, it may be necessary to use the process for printing crippled fingers in order to obtain satisfactory impressions. In all such instances, a notation concerning this abnormality should be made on the fingerprint card.

The problems encountered in fingerprinting persons of an advanced age are mentioned at this point for discussion purposes only. Situations involving crippled fingers due to advanced age can be handled in the same manner as outlined for bent and crippled fingers. Because of advanced age, the fingerprint ridges are sometimes very faint, and to obtain legible inked prints, it is necessary to use a very small amount of ink on the inking plate and very little pressure in rolling the fingers. Practice with this technique will produce satisfactory fingerprint impressions.

In order to obtain an accurate classification, it is necessary that missing fingers be clearly explained on the fingerprint card. Some individuals are born without certain fingers, and in those instances, the notation "missing at birth" should be used rather than just using the word "missing." A proper notation concerning this situation will prevent the fingerprint card from having to be returned. If an individual's fingers have been amputated, a proper notation to this effect

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Figure 13. Use of curved holder for taking rolled impressions of bent fingers.

should appear in each applicable individual fingerprint block. If just a portion of the first joint of a finger is amputated, the remaining portion of the first joint should be inked and printed, and, in addition, a notation such as "tip amputated" should be placed on the fingerprint card. In situations where all 10 fingers are amputated, consideration should be given to obtaining footprints.

Temporary disabilities, such as fresh cuts, wounds, and bandaged fingers, are beyond the control of the fingerprint technician. As indicated previously, a complete classification formula is necessary in order that a fingerprint card be retained in FBI files. An indication on the fingerprint card to the effect that a finger is "freshly cut, bandaged" will cause the fingerprint card to be returned to the contributor since accurate classification is impossible. In the event of temporary injury, the fingerprints should be taken, if possible, after the injury has healed. This same situation prevails with large blisters which tem-

porarily disfigure ridge detail.

Problems resulting from the occupation of the individual (such as carpenters, bricklayers, cement workers) are a definite challenge to the fingerprint technician. When it is obvious that the occupation of the individual being fingerprinted has affected or worn the ridges on the tips of the fingers to the point where it is difficult to obtain legible fingerprints, consideration should be given to the use of softening agents (oils and creams) or fingerprinting at a later date when the ridges have had an opportunity to re-form. It is possible in many instances to obtain legible fingerprints when the ridges are worn by using a very small amount of ink on the inking plate as described above in taking fingerprint impressions of persons of advanced age.

Excessive perspiration will result in the failure of ink to adhere properly to the tips of the fingers. When this situation is encountered, the subject's fingers should be individually wiped clean and immediately inked and

printed. This process should be followed with each finger. It is also helpful to wipe the fingers with alcohol or some other drying agent which will temporarily reduce the amount of perspiration and thus permit the technician to obtain clear, legible fingerprint impressions.

Reasons for Return

The principal reason for return of fingerprint cards to contributing agencies is basically lack of sufficient detail to completely and properly classify fingerprint impressions for accurate filing. As experienced identification officers are aware, it is possible to search fingerprints under unusual circumstances where incomplete or approximate classifications are obtained; however, this procedure is extremely time consuming and can only be resorted to under exceptional circumstances. In general, if a fingerprint card cannot be accurately classified and filed, the fingerprint card is returned to the contributing agency. In addition to the technical problems encountered, fingerprint cards will be returned to the contributor because of lack of complete identifying information, such as name, sex, race, height, weight, and notations concerning missing fingers.

It is the desire of the FBI Identification Division to provide law enforcement agencies with the best possible identification information in the shortest time possible. Regardless of the medium used to record fingerprint impressions, the submission of clear, legible black fingerprints on standard white fingerprint cardstock, including complete descriptive information by fingerprint contributors, will materially assist in attaining this goal.

